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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,277	11/14/2003	Yuan-Chang Huang	681954-137US	2046

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ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER

ROSE, KIESHA L

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,277

Applicant(s)

HUANG ET AL.

Examiner

Kiesha L. Rose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,9-11,13-16 and 21-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,9-11,13-16 and 21-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the amendment filed 5 October 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3,5-7,9-11,13-16 and 21-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwon et al. (U.S. Publication 2004/0219715) in view of Chang et al. (U.S. Patent 6767,818).

Kwon discloses a semiconductor device (Figs. 6 and 9) that contains a substrate (100) comprising circuits (180), a plurality of conductive bumps (220) provided in adjacent relationship to each other on substrate in electrical contact with circuits and having upper surface, pair of sidewalls, an outer wall and inner wall, a conductive layer (230/180(on top of bump Fig. 9)) made of gold (Au) provided on plurality of conductive bumps wherein conductive layer is absent from both sidewalls and inner wall, a shoulder provided in conductive layer and a protection layer (190) provided on substrate adjacent to rows of plurality of conductive bumps and a test probe pad (210 that extends on the substrate past the bump). Kwon discloses all the limitations except for the conductive bump to include an electrically insulative layer. Whereas Chang

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discloses an electrically conductive bump (Fig. 1e) that contains a bump pad (18), an electrically insulating bump layer (polyimide) (22) and a conductive layer (24) formed over electrically insulative layer. The bump (22) is formed of an electrically insulative layer to negate the need of a photoresist (Column 3, lines 10-13) and to act as a stress-buffer along with providing electrical communication with the conductive elements and conductive pads that encapsulate the electrically insulating bump layer. (Column 3, lines 45-49) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kwon by incorporating an electrically insulating bump layer to negate the need of a photoresist (Column 3, lines 10-13) and to act as a stress-buffer along with providing electrical communication with the conductive elements and conductive pads that encapsulate the electrically insulating bump layer as taught by Chang. In regards to claim 27, an anisotropic conducting film (350) disposed between the first substrate (400) with conductive pads (480) and second substrate (100) for electrical connection of the bumps to the conductive pads.

Claims 1-3,5-7,9-11,13-15 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (U.S. Publication 2003/0183933) in view of Chang et al. (U.S. Patent 6767,818).

Kobayashi discloses a semiconductor device (Figs. 3a and 19) that contains a substrate (3) comprising circuits (13), a plurality of conductive bumps (10) provided in adjacent relationship to each other on substrate in electrical contact with circuits and having upper surface, pair of sidewalls, an outer wall and inner wall, a conductive layer (1) made of gold (Au) provided on plurality of conductive bumps wherein conductive

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layer is absent from both sidewalls and inner wall, a protection layer (105) provided on substrate adjacent to rows of plurality of conductive bumps and a shoulder (etched area of the conductive layer 1 so it does not completely cover the bump) at the upper surface of the bump. Kobayashi discloses all the limitations except for the conductive bump to include an electrically insulative layer. Whereas Chang discloses an electrically conductive bump (Fig. 1e) that contains a bump pad (18), an electrically insulating bump layer (polyimide) (22) and a conductive layer (24) formed over electrically insulative layer. The bump (22) is formed of an electrically insulative layer to negate the need of a photoresist (Column 3, lines 10-13) and to act as a stress-buffer along with providing electrical communication with the conductive elements and conductive pads that encapsulate the electrically insulating bump layer. (Column 3, lines 45-49)

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kobayashi by incorporating an electrically insulating bump layer to negate the need of a photoresist (Column 3, lines 10-13) and to act as a stress-buffer along with providing electrical communication with the conductive elements and conductive pads that encapsulate the electrically insulating bump layer as taught by Chang.

Response to Arguments

Applicant's arguments with respect to claims 1-3,5-7,9-11,13-16 and 21-34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844. The examiner can normally be reached on T-F 8:30-6:00 off Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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KLR


ZANDRA V. SMITH
SUPERVISORY PATENT EXAMINER
Jan. 6, 2005